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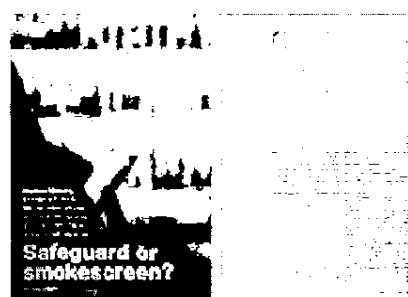


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SAFEGUARD OR SMOKESCREEN

Maurice Mulcahy discusses pub smoke, the 'ventilation solution' and the widely debated question of whether smoking should be banned in bars

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Currently, 50 Irish bar-workers are taking legal action for ill health that they allege is due to passive smoking. According to the Vintners Federation: "If successful, these actions could have serious implications for the trade in general... but they will be very hard to prove in court".¹ Perhaps these bar workers are fortunate that they are not relying on the Approved Code of Practice (ACoP) that is proposed for the UK.² In its present form, the ACoP will permit bar workers to be exposed to environmental tobacco smoke (ETS) because it is seen more as a welfare issue to be controlled by ventilation than as a deadly risk. ETS, or "second-hand smoke", consists of over 4,000 chemicals, of which somewhere between 40 and 60 have been identified as carcinogens. The carcinogens are released into the air by way of "mainstream" smoke from exhaled tobacco smoke and "sidestream" smoke arising from the burning end of the cigarette, cigar or pipe, or through the filter paper between puffs.³ The distribution of chemicals in sidestream and mainstream smoke can vary as a result of the type of filter on a cigarette or the weight of tobacco and paper consumed in smouldering. Most significantly, the qualitative nature of sidestream smoke varies from mainstream smoke, in that it is enriched with many of the carcinogens to be found in mainstream smoke, but that they are released at higher rates.³ The passive smoker (sitting next to a smoker) is exposed to as much benzene as the smoker gets from smoking six cigarettes and as much N-nitrosodimethylamine as the smoker derives from smoking a staggering 75 cigarettes.⁴

CHRONIC HEALTH EFFECTS

Passive smoking has been identified as a cause of cancer, cardiovascular disease, strokes and asthma in non-smokers, with the risk of illness increasing with length and intensity of exposure. For food workers the increased risk of developing cancer has been estimated to be on average 50 per cent greater than that of the general public, with air measurements suggesting such workplaces to be as much as six times more polluted with ETS than offices.⁵ But what of smoky bars? A recent Canadian study, which talks in terms of "occupational smoker years", suggests that a doubling of cancer risk is possible in bar workers as a result of exposure to 26 smokers a day over the course of one year (or 13 smokers a day over a period of two years, and so on).⁶ ETS has been ranked as the number one cause of environmental

period of two years, and so on).⁶ **ETS** has been ranked as the number one cause of environmental cancer in the US, with related cancer mortality greater than all other environmental risks put together.⁷ In California, waitresses have been found to display the highest mortality rate of any **occupational** group, including four times the lung cancer rate.⁸ It is not only lung cancers that have been investigated. In a study of Norwegian waiters, excess cancer risks for the digestive tract, liver and rectum were found. Furthermore, the Californian Environmental Agency has drawn an association between passive smoking and sinus cancer. In addition, cardiac disease has been associated with low-level exposure to **ETS**, such that non-smokers who live with smokers acquire a 23 per cent direct increased risk of heart disease for their estimated exposure to a mere 1 per cent of the smoker's tobacco smoke.⁹ Recently there has been research indicating that 30 minutes exposure to passive smoking is as stressful on the cardiac system as actually smoking.¹⁰ Research in New Zealand has attributed a six-fold increase in stroke risk as a result of long-term passive smoking.¹¹ Finally, very recent research in Finland suggests that adults who are exposed to passive smoking have a five times greater likelihood of developing asthma than those who are not exposed.¹²

THE IRISH EXPERIENCE

Ireland has the highest rate of cardiovascular disease in the European Union and some 7,000 Irish citizens die as a result of tobacco related diseases each year, while around 30 people die annually in Ireland as a result of tobacco related illnesses brought about by passive smoking. Although nearly 70 per cent of Irish adults are non smokers, European estimates suggest that as many as 80 per cent of the population are passive smokers.¹³ Yet this non-smoking majority have not yet been galvanised into demanding smoke free environments in the majority of bars - such is their passive acceptance of the risks, there are no smoke free bars in Ireland. There is evidence however, that Irish public opinion is awakening as a recent on-line computer poll found that nearly 50 per cent of respondents supported the notion of banning smoking in bars. Without doubt, controls on smoking in public places will affect tobacco sales and may over time drive down smoking prevalence, particularly among younger people who are conditioned by clever advertising, peer pressure and hitherto public apathy to smoking in leisure settings such as bars. It is against this background that passive smoking must be viewed. The All Party Government Committee that looked at smoking and health in Ireland has declared that "environmental tobacco smoke is not merely a nuisance, but a deadly risk".¹⁴

THE VENTILATION MYTH

Many well intentioned, but poorly informed, public representatives and officials accept ventilation as a safe option for dealing with tobacco smoke in public areas. There is no accepted ventilation standard that will remove the gas or vapour phase of **ETS**, and so ensure worker safety. The countries that have looked at either the biological uptake of tobacco constituents or indoor air quality standards have recognised that the only safe level of **ETS** for those working in smoky environments is zero. In the US, a panel of experts assembled by the Federal Occupational Safety and Health Administration and the American Conference of Governmental Industrial Hygienists has concluded that dilution ventilation, air cleaning or displacement ventilation, even under moderate smoking conditions, cannot control **ETS** to the minimum level for workers or patrons in hospitality venues without increasing the ventilation required to an impractical level. The panel has also stated that: "Smoking bans remain the only viable control measure to ensure that workers and patrons of the hospitality industry are protected".¹⁵ Indoor air quality standards have been another approach to the problem. In Norway, air nicotine has been used as a marker of **ETS** and a standard of 1 $\mu\text{g}/\text{m}^3$ of nicotine has been set. However, nicotine levels measured in non-smoking zones were found to significantly exceed 10 $\mu\text{g}/\text{m}^3$. Risk predictions based on these results have suggested that exposure to nicotine levels of 20 $\mu\text{g}/\text{m}^3$ over a 40 year period, means that 25 waiters in every 1,000 will die from a heart attack and two to three of lung cancer. This is considered an unacceptable level of risk and calls have been made for a ban on smoking.¹⁶ It could mean that Norwegian smokers will have to retreat to a smoking room for a cigarette as opposed to non-smokers retreating to a no-smoking area. Further studies have looked at the biological uptake of tobacco metabolites by those exposed to **ETS**. In a rather unusual study of the crew of a submarine, exhaled breath samples of carbon monoxide showed that at the end of a trip, non-smoking crew had the same exhaled carbon monoxide levels as the crew members that smoked an average of 21 cigarettes a day before the trip.¹⁷ In a study of pub patrons, the absorption of nicotine and carbon monoxide was assessed among seven non-smoking volunteers in a Liverpool pub. The study showed that the environmental carbon monoxide levels found of 13 ppm were "towards the extreme end of acute natural exposure".¹⁸ In a study of non-smoking bar staff working in London and Birmingham, where saliva cotinine was used as the biomarker, the authors equated the level of passive smoking to that of actively smoking just over half of a cigarette.¹⁹ Research into pub smoke, published this year, investigated whether greater exposure of bar workers to passive smoking resulted in greater ill health and whether

ventilation in bars is effective in removing carbon monoxide (a marker gas of **ETS**).²⁰ A triangulation of methods were used in the study: questionnaires; the sampling of environmental carbon monoxide (as a marker of **ETS** pollution); and measurements of exhaled carbon monoxide in the breath of volunteers (as a marker of the biological uptake of chemicals in **ETS**). The study found that the majority of bar ventilation systems (13 out of 14) are unable to maintain environmental carbon monoxide at outside background levels during busy bar times, indicating a failure to eliminate the invisible gas/vapour phase of **ETS**. The steady rise of carbon monoxide levels seen in the resultant graphs clearly illustrated the lack of adequate fresh air ventilation to each of the bars studied. The record breaking levels of carbon monoxide (63 and 64 ppm) raised serious questions as to the levels of other dangerous constituents in **ETS** that passive smokers may be exposed to when in bars, or when in close proximity to a smoker. Given these findings, it was of concern to also find that bar personnel spent much more time exposed to passive smoking than was anticipated - around 41 hours a week (see table 1). In addition, the duration of employment for the bar personnel surprisingly paralleled that of the control group (healthcare workers), with 38 per cent of the bar workers questioned stating that they had been in the business for over 10 years (see figure 1).

TIME FOR A RETHINK

At a time when the ACoP has been shelved²¹ and the Irish Government is considering a smoking ban in restaurants at mealtimes, as a possible forerunner to a complete ban in bars²², the use of ventilation as a means to safeguard bar workers should be examined more critically. Bar workers can be exposed to extremely high levels of **ETS** - with little reduction of the invisible gas/vapour phases being achieved by ventilation systems. These workers may be constantly exposed to workplace tobacco smoke for many years, and given the associated significantly elevated risks of cancer and cardiac disease it is time for a rethink. **ETS** is not merely a nuisance to be dealt with by ventilation, but a deadly risk that demands more. Although codes based on ventilation may offer a useful "half way house" in shifting public opinion towards the notion of smoke-free bars, they should not be enshrined into an ACoP. Ventilation will not effectively separate smokers from non-smokers in the same room space, nor offer a safeguard to bar workers. Unless bar workers can be protected from passive smoking by the segregation of smokers from bar service areas by the provision of separate smoking rooms, from which **ETS** cannot migrate, smoking needs to be banned. Family rooms emerged in response to customer demand - it is now time for customers to demand separate smoking rooms and safe smoke-free bars. It may be litigation rather than legislation that delivers smoke-free bars, as insurance companies globally face claims such as that by Marlene Sharp (see box, bottom right hand corner).²³ Watch this space. Maurice Mulcahy is Senior EHO at the Western Health Board, Galway, Eire. The views expressed in this article are those of the author and do not represent those of the author's employer or the EHOA in Ireland.

CASE STUDY

Marlene Sharp, an Australian bar attendant who had never smoked, recently won A\$450,000 damages in a New South Wales court judgement. She began working in the club in 1984, then in May 1995 she noticed a lump in her neck which was diagnosed as malignant. She was successful in her case that 11 years working in a smoky club "caused or materially contributed" to her throat cancer. Fortunately her cancer is now in remission.²³

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